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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,822	08/20/2003	Horng-Bin Hsu	11259-US-PA	1821

31561 7590 04/21/2006

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
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EXAMINER	
SHAPIRO, LEONID	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,822	HSU, HORNG-BIN	
	Examiner	Art Unit	
	Leonid Shapiro	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-2, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al. (US Patent No. 6,809,717 B2) in view of Watanabe (JP 11-109317).

As to claim 1, Asao et al. teaches a driving method of a Liquid Crystal Display (LCD) (See Col. 1, Lines 7-12), the liquid crystal display comprising a back-light module (See Fig. 19, item 101) and a liquid crystal display panel (See Fig. 19, item 80), wherein the liquid has a plurality of pixels (See Col. 1, Lines 13-15), the driving method of the liquid crystal display comprising the steps of:

adjusting brightness of the back-light module (See Fig. 21, items Light Source, R1-R2, Col. 8, Lines 15-42 and 1-2), and

adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb (in the reference is equivalent to gradational display state), and driving each of the pixels with the grayscale value Xb accordingly (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

Asao et al. does not disclose

detecting the maximum grayscale X of all pixels in the present image;

adjusting brightness of the back-light module to (X / N) x L, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module.

Watanabe teaches

detecting the maximum grayscale X of all pixels in the present image (See Figure, item 7, Solution);

adjusting brightness of the back-light module to (X / N) x L, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module in the reference L= 100, X= 30, N=100, so (X / N) x L)=30% (See Solution).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Watanabe into Asao et al. system in order to maximize contrast and reduce power consumption (See Problem To Be Solved in the Watanabe reference).

As to claim 2 Asao et al. teaches a mapping correlation between the grayscale value Xa (in the reference is equivalent to the higher (first) luminance) and the grayscale value Xb (in the reference is equivalent to the lower (second) luminance) is linear (in the reference is equivalent to 1/5) and the correlation is performed as Xb=(Xa/X) x N (in the reference is equivalent to 1/5) (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

As to claim 4, Asao et al. teaches light transmittance of each of the pixels is adjusted by a bias voltage based on the grayscale value (in the reference is equivalent to gradational display state) (See Fig. 14, items Tx, Ty, Col. 26, Lines 33-56).

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al. and Watanabe as applied to claim 1 above, and further in view of Kori et al. (Pub. No.: US 2004/0071363 A1).

Asao et al. and Watanabe do not disclose a mapping correlation between the grayscale value Xa and the grayscale value Xb is nonlinear.

Kouri et al. teaches a mapping correlation between the grayscale value Xa and the grayscale value Xb is nonlinear (See paragraph 0786).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kouri et al. into Watanabe and Asao et al. system in order to improve signal (See paragraph 0007 in the Kouri et al. reference).

3. Claims 5-6, 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al. in view of Watanabe and Lin (US Patent No. 6,674.914 B1).

As to claim 5, Asao et al. teaches a driving method of a Liquid Crystal Display (LCD) (See Col. 1, Lines 7-12), the liquid crystal display comprising a back-light module (See Fig. 19, item 101) and a liquid crystal display panel (See Fig. 19, item 80), wherein the liquid has a plurality of pixels (See Col. 1, Lines 13-15), the driving method of the liquid crystal display comprising the steps

of:

adjusting brightness of the back-light module (See Fig. 21, items Light Source, R1-R2, Col. 8, Lines 15-42 and 1-2), and

adjusting a grayscale value Xa of each pixel to a mapping grayscale value Xb (in the reference is equivalent to gradational display state), and driving each of the pixels with the grayscale value Xb accordingly (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

Asao et al. does not disclose

detecting the maximum grayscale X of all pixels in the present image;

adjusting brightness of the back-light module to (Y / N) x L, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module.

Watanabe teaches

detecting the maximum grayscale X of all pixels in the present image (See Figure, item 7, Solution);

adjusting brightness of the back-light module to (Y / N) x L, where N is the highest grayscale of the image display system, and L is a corresponding brightness to the grayscale value N of the back-light module in the reference L= 100, Y= 30, N=100, so (Y / N) x L)=30% (See Solution).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Watanabe into Asao et al. system in order to

maximize contrast and reduce power consumption (See Problem To Be Solved in the Watanabe reference).

Asao et al. and Watanabe do not disclose dividing a plurality of grayscale values 0,1,2,..., N into a plurality of segments, where n is the highest grayscale of the image display system.

Lin teaches dividing a plurality of grayscale values 0,1,2,..., N into a plurality of segments, where n is the highest grayscale of the image display system (See Fig. 2A, items k00-k20, location 3-5, Col. 4, Lines 47-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Lin into Watanabe and Asao et al. system in order to improve image processing (See Col. 1, Lines 6-9) in the Lin reference).

As to claim 6 Asao et al. teaches a mapping correlation between the grayscale value Xa (in the reference is equivalent to the higher (first) luminance) and the grayscale value Xb (in the reference is equivalent to the lower (second) luminance) is linear (in the reference is equivalent to 1/5) and the correlation is performed as Xb=(Xa/X) x N (in the reference is equivalent to 1/5) (See Fig. 14, items Tx, Ty, Col. 7, Lines 43-55 and Col. 26, Lines -56).

As to claim 8, Lin teaches the corresponding output brightness is retained when the grayscale maximum X is located in either a range between Z+S and Z of a present image, where Z is lower limit of one of the segments (in the reference minimum value of pixels generated at that location) (See Fig. 2A, items k00-k20, location 3-5, Col. 4, Lines 47-65).

As to claim 9, Lin teaches each of segments contains the same number of the gray scale values (in reference locations 2 and 3 have the same grayscale value 2) (See Fig. 2A, items k00-k20, location 3-5, Col. 4, Lines 47-65).

As to claim 10, Lin teaches each of segments contains different number of the gray scale values respectively (in reference locations 3 and 4 have respectively grayscale values 2 and 3) (See Fig. 2A, items k00-k20, location 3-5, Col. 4, Lines 47-65).

As to claims 11 Asao et al. teaches light transmittance of each of the pixels is adjusted by a bias voltage based on the grayscale value (in the reference is equivalent to gradational display state) (See Fig. 14, items Tx, Ty, Col. 26, Lines 33-56).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asao et al., Lin and Watanabe as applied to claim 5 above, and further in view of Kori et al.

Asao et al. and Watanabe do not disclose a mapping correlation between the grayscale value Xa and the grayscale value Xb is nonlinear.

Kouri et al. teaches a mapping correlation between the grayscale value Xa and the grayscale value Xb is nonlinear (See paragraph 0786).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Kouri et al. into Watanabe and Asao et al. system in order to improve signal (See paragraph 0007 in the Kouri et al. reference).

Response to Arguments

5. Applicant's arguments filed on 02.15.06 have been fully considered but they are not persuasive:

On page 3, last paragraph of Remarks, Applicant stated regarding Asao et al. reference, that light quantities Tx, Ty are independently set for different subfield periods and therefore no mapping relationship between them. However, Asao et al. clearly stated that a first transmittance corresponding to the first luminance and second transmittance at most 1/5 of the second transmittance (See Fig. 14, items Tx, Ty, Col. 7, Lines 46-55 and Col. 26, Lines 33-56).

On page 4, last paragraph of Remarks, Applicant's stated that 1/5 is for defining value range of the lower luminance in the second operation rather than a coefficient for mapping. However, Asao et al. teaches the transmittance of the pixels corresponding to the luminance and coefficient for mapping is equal 1/5 (See Fig. 14, items Tx, Ty, Col. 7, Lines 46-55 and Col. 26, Lines 33-56).

Notice, that Asao et al. coefficient for mapping (1/5) completely correspond to definition of the Application for linear mapping correlation as a linear function (See paragraph 0011 in the Application).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Telephone Inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LS
04.21.06

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